A NEW SPECIES OF FRITILLARIA FROM NORTHEASTERN TURKEY

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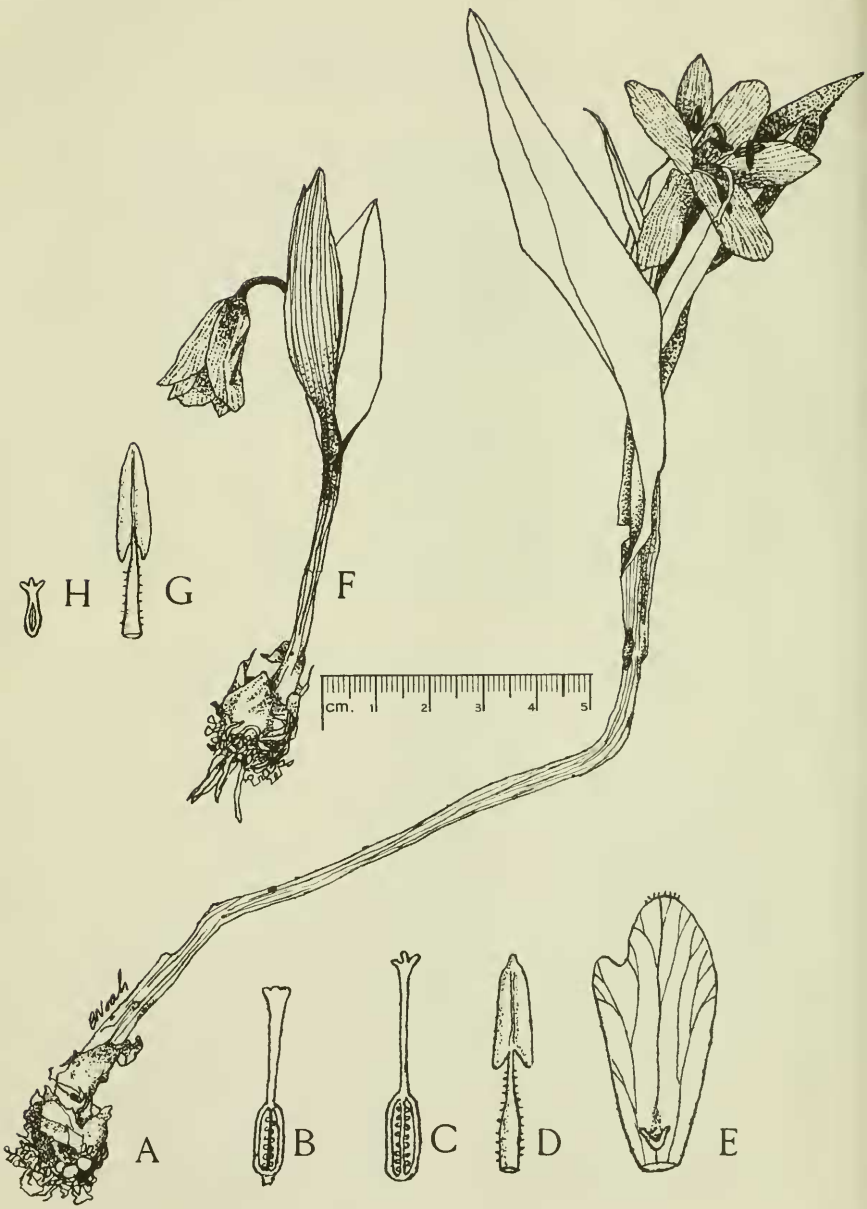
Fritillaria erzurumica sp. nov.

Bulbus globularis vel ovatus, diam. 10-18 mm., squamis 3-4 membranaceis albis vel helvis obtectus, bulbilis abundis instructus. Caulis 8-22 cm. altus, diam. 3-4 mm., pars subterranea irregulariter curvata, ea supraterranea erecta, veneta, glauca, glabrata. Folia 3-4, oblongo-lanceolata, omnia spiralia, 4-12 cm. longa, 0.5-2 cm. lata glauca, glabrata, apice acuta, basi amplexicaulia. Flores rosei, solitarii, plus minusve nutantes, perigonium acetabuliforme. Perianthii segmenta subtiliter reticulata, obovata; 22-24 mm. longa, 9-12 mm. lata, margine integerrima vel unilateraliter lobata, apice dorsaliter pubescentia. Nectaria supra basin tepali sita, lunata vel hippocrepiformis, conspicue viridia. Stamina 15-18 mm. longa, filamentis filiformibus, sparsim ciliatis, ad basem versus dilatatis, antheris oblongis, 4-8 mm. longis, apice acutis vel obtusis, basi hastilabiis. Ovarium circa 7 mm. altum, stylus 12 mm. longus, filiformis vel clavatus, stigma ut videtur aut trilobulatum aut dilatatum ac tricrenulatum. Grana pollinis prolata, unisulcata, exina 1.6 micra crassa, subtiliter polygonali-reticulata, axis longitudinalis 60.2(54.4-64.6) micra longus, axis transversalis 39.1(34.0-45.9) micra longus.

Holotype: Northeastern Turkey, Erzurum, Palandöken Mts., alt. ca. 2900 m., eastern exposure, mountain steppe, June 4, 1970, Sabri Özyurt No.975 (U.C. and Herbarium of Atatürk Üniv. in Erzurum).

Bulbs spherical or ovate, 10-18 mm. in diameter, covered with 3-4 membranous scales which are white or light brown in color, "rice grain" bulbils abundant. Stem 8-22 cm. high, 3-4 mm. thick, subterranean portion irregular in shape, but the portion above ground straight, erect, glabrate, bluish-green and glaucous. Leaves 3-4, oblong-lanceolate, spirally arranged, 4-12 cm. long, 0.5-2 cm. broad, bluish-green, glabrate, pointed at apex and clasping at base. Flowers pink, solitary, more or less nodding, perianth saucer-shaped. Perianth segments finely reticulate, obovate, 22-24 mm. long, 9-12 mm. wide, with entire margins or unilaterally lobate, apex pubescent on the dorsal side. Nectaries situated above the base of perianth segments, crescent- or horseshoe-shaped, strikingly green. Stamens 15-18 mm. long; filaments filiform, sparsely ciliate, dilated at base; anthers oblong, 4-8 mm. long, pointed or blunt at apex, hastulate at base. Ovaries approximately 7 mm. long; style 12 mm. long, linear or club-shaped; stigma visibly trilobulate or tricrenulate. Pollen grains prolate, unisulcate, exine 1.6 microns thick, finely reticulate owing to polygonal sculpturing, the longitudinal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axis 60.2 (54.4-64.6) microns long, transverse axis 39.1(34.0-45.9) microns long.

Fritillaria erzurumica Kasapligil var. abortivus var. nov.
Flores penduli, infundibuliformes, ovarium abortivum, circa 5 mm. longum, ovulis deficientibus; stylus brevissimus; stigma conspicue trilobatum. Grana pollinis 1/3 steriles, deformata,axis longitudinalis 48.2 (45.9-51.0) micra longus, axis transversalis 21.8 (20.4-25.5) micra longus.

Holotype: Northeastern Turkey, Erzurum, Palandöken Mts.,alt.ca. 2700 m., northern exposure, mountain steppe, June 4, 1970, Sabri ÖzyurtNo. 946 (U.C. and Atatürk Üniversity in Erzurum).

Flowers pendent, funnel-shaped, ovary abortive, about 5 mm. long, without ovules; style extremely short;stigma conspicuously trilobed. One third of the pollen grains sterile and deformed,the longitudinal axis 48.2 (45.9-51.0) microns long and the transverse axis 21.8 (20.4-25.5) microns long.

Fritillaria erzurumica belongs to the section Eufritillaria Baker (1874) and subsection Olostyleae Boissier (1884) according to the classification followed by Krause (1930). This new species is closely related to F. caucasica Adams (Syn. F. tulipifolia M. Bieb.) and F. armena Boiss.both of which are native to Caucasia, Transcaucasia and to northeastern Turkey (cf. Komarov 1935 for their distribution). All three species show a remarkable resemblance with regard to their vegetative organs, and they are characterized by the lack of checkering on their tepala. However, they can be distinguished sharply from each other by several features as summarized in the following table:

F. erzurumica	F. caucasica	F. armena
Flowers: Saucer-shaped,semipendulous.	Campanulate-conical, Completely pendent.	Campanulate-funnel-shaped,compl.pendent.
Perianth:bright pink with dark pink reticulum.	Brownish purple inside,glaucous-blue outside.	Dark red with gray bloom and greenish gold streaks.
Tepala: Obovate with entire margins or unilaterally lobate.	Elliptic lanceolate, with entire margins, apiculate.	Elliptic lanceolate with serrulate margins.
Nectaries:Crescent-shaped, prominently green.	Linear oblong,green.	Obscure, greenish depression.
Filament: Sparsely ciliate.	Glabrous.	Shaggy trichomes.
Style: Linear or club-shaped.	Club-shaped.	Linear.

F. erzurumica	F. caucasica	F. armena
Stigma: Tricrenate to trilobulate.	Obscurely trilobed.	Entire or obscurely trilobed.
Habitat: Mountain steppe.	Alpine scrub vegetation.	Alpine meadows.
Flowering: June	April	April

The range of variation in stem height is quite similar in F. erzurumica and F. armena although F. caucasica tends to be a tall plant reaching a height up to 40 cm. Beck (1953, p.59) describes "lower opposite leaves" for F. armena but the specimens and the classical illustrations (cf. Baker 1878, Stoyanoff 1931) I examined show alternate leaf arrangements only. Turrill (1948) distinguishes the genus Fritillaria from the related genus Lilium on the basis of attachment of filaments to the anthers. Although basifixed anthers seem to be a general occurrence among the specimens I examined, this property also shows a considerable variation in F. erzurumica. Some of the stamens I studied had more or less dorsifixed anthers resulting in a versatile condition, as in Lilium.

F. erzurumica var. abortivus seems to be a member of a population which is very well established in its habitat. The abortion of its pistil as well as of one third of the pollen grains may be the result of hybridization, polyploidy, fragmentation or structural heterozygocity of the chromosomes. Beetle (1944) and Cave (1970) reported morphological and cytological diversities among populations of F. lanceolata Pursh and several other California species. Both F. erzurumica var. erzurumica and F. erzurumica var. abortivus need to be studied cytologically to determine the nature and extent of their variability. The perpetuation of sterility has been accomplished by successful asexual reproduction by means of bulbils.

Grateful acknowledgements are due to Miss Barbara Noah (Mills College 1971) for having prepared the figures A and F from the type specimens; to Dr. Rimo Bacigalupi of the Jepson Herbarium (University of California, Berkeley) for having read the manuscript and to Mr. Sabri Özyurt (Assist.Botanist of the Faculty of Sciences, Atatürk University, Erzurum, Turkey) for having supplied the desiccata.

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LEGENDS FOR THE PLATE:

Fritillaria erzurumica Kasapligil: A. Habit drawing with semi-pendent flower above and several "rice grain" bulbils at base; B. a pistil with club-shaped style and tricrenulate stigma; C. a pistil with linear style and trilobulate stigma; D. a stamen with ciliate filament dilated at base; E. adaxial view of a unilaterally lobate tepal showing the dichotomous branching of three vascular bundles and the nectary situated above the base. Fritillaria erzurumica var. abortivus Kasapligil: F. Habit of the plant with a distinctly pendent flower; G. abaxial view of a stamen with dorsifixed anther; H. abortive pistil. Figures A and F: 1X, all others: 2X.